

2009-12-29 Agilent Spectrum Analyzer Commands

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10:22 AM

- A1
 - Clear Write Trace A
 - Same as CLRW TRA
- A2
 - Max Hold Trace A
 - Same as MXMH TRA
- A3
 - View Mode Trace A
 - Same as VIEW TRA
- A4
 - Blank Trace A
 - Same as BLANK TRA
- AMB {on | off | 1 | 0 | ?}
 - Trace A = Trace A - Trace B
 - (APB or KSc to restore)
 - Same as C2
- AMBPL
 - (A minus B) plus Display Line into A.
 - The AMBPL command does a point-by-point subtraction of Trace B from Trace A, and then adds the display line point values to the difference. The results are sent to Trace A
- ANNOT {ON | OFF | 1 | 0 | ?}
 - The ANNOT command turns on or off all annotation on the spectrum analyzer display.
 - Same as KSo and KSp commands
- APB
 - A + B to A
 - The APB command does a point-by-point addition of Trace A and Trace B, and sends the results to Trace A.
 - APB can restore the original trace after an AMB or a C2 command has been executed.
 - same as KSc command
- AT { Number DB | UP | DN | OA | ?}
 - Specifies the RF Attenuation
 - signal levels > 20 dBm will damage SA
- AUNITS { DBM | DBMV | DBUV | V | ?}
 - Specifies the amplitude readout units for RL, marker & display line
 - Identical to KSA, KSB, KSC and KSD commands
- AXB
 - Exchange Trace A and Trace B point by point
 - Identical to the EX command and to the XCH TRA, TRB command
- B1
 - Clear write Trace B
 - Same as CLRW TRB
- B2
 - Maximum hold Trace B
 - Same as MXMH TRB

- B3
 - View Trace B
 - Same as VIEW TRB
- B4
 - Blank Trace B
 - Same as BLANK TRB
- BL
 - Subtracts the display line from Trace B and sends the results to Trace B.
 - Same as BML command
- BLANK {TRA | TRB | TRC}
 - Blanks the trace and stops taking data into the specified trace.
 - Same as A4, B4 and KSk commands.
- BML
 - Subtracts the display line from Trace B and sends the results to Trace B.
 - Same as BL command
- BTC
 - Transfers Trace B to Trace C
 - Trace C cannot be an active trace
 - Same as KS1 command.
- BXC
 - Exchange Trace B data with Trace C data
 - Trace C cannot be an active trace
 - Same as Ksi command
- C1
 - Turns the A Minus B mode (turned on by C2 command) off.
 - Same as AMB OFF command.
- C2
 - Subtracts the points in Trace B from the corresponding points in Trace A and sends the results to Trace A.
 - If the input signal remains unchanged, C2 can restore the original trace after an APB or KSc command.
 - Same as AMB ON command
- CA
 - Couple Attenuation
 - During normal operation, the spectrum analyzer's input attenuation is coupled to the reference level. This coupling keeps the mixer input at a level such that a continuous wave signal displayed at the reference level is at or below -10 dBm (or the value specified in the ML command or the 'KS,' command.)
 - The CA command sets the threshold to -10 dBm (or to the value specified by the ML command or KS command. The counterpart to the CA command is the AT command.
- CF { Real {HZ | KZ | MZ | GZ} | UP | DN | OA | ?}
 - Specifies the center frequency value
 - Real is any real or integer number.
 - Step size:
 - When coupled using CS command: step size = 10% of the span
 - When uncoupled, step size determined by SS command
- CLRAVG
 - Restarts the VAVG command by resetting the number of average sweeps to one.
 - Does not stop video averaging. Use VAVG OFF; to stop video averaging.
- CLRW {TRA | TRB}

- Places trace in clear-write mode. Data acquisition begins at the next sweep.
 - Same as A1 and B1 commands
- **CONTS**
 - Sets the spectrum analyzer in continuous sweep mode.
 - In the continuous sweep mode, the spectrum analyzer takes its next sweep as soon as possible after the current sweep (as long as the trigger conditions are met). A sweep may temporarily be interrupted by data entries made over the remote interface or from the front panel.
 - Identical to the S1 command
- **CR**
 - Couples the resolution bandwidth to the video bandwidth and to the sweep time.
The counterpart to the CR command is the RB command which breaks the coupling. Use the CR command to re-establish coupling after executing the RB command.
- **CS**
 - Couples the center frequency step size to the span width so that the step size equals 10% of span width, or one major graticule division.
 - The counterpart to the CS command is the SS command which breaks the coupling.
- **CT**
 - Couples the sweep time to the span, resolution band width and video bandwidth.
 - The counterpart to the CT command is the ST command which breaks the coupling.
- **CV**
 - Couples the video bandwidth to the resolution bandwidth.
 - The counterpart to the CV command is the VB command which breaks the coupling.
- **DA { INTEGER }**
 - Returns the contents of the specified memory address
 - DA 1 - equivalent to the commands TA and TRA?
 - DA 1025 - equivalent to the commands TB and TRB?
 - DA 3073 - equivalent to the TRC? Command. The TRC? Command is not supported on Option 266.
- **DET +{NRM | SMP | NEG | POS | ? }**
 - Selects the type of spectrum analyzer detection
 - POS - enables positive-peak detection, which displays the maximum video signal detected over a number of instantaneous samples for a particular frequency.
 - SMP - enables sample detection, which uses the instantaneous video signal value. Video averaging and noise-level markers, when activated, activate sample detection automatically.
 - NEG - enables negative peak detection in sweep times of less than or equal to 200 ms.
 - NRM (PSA) - PSA series analyzers only - enables the 'rosenfell' detection algorithm that selectively chooses between positive and negative values.
 - NRM (ESA) - ESA series analyzers only - normal detection is not possible on ESA series analyzers, so the detection will default to positive-peak detection (POS) when NRM is selected.
 - Same as KSA, KSb, KSd and KSe commands.
- **DL { REAL | UP | DN | OA | ? }**
 - REAL is any real or integer number. Default units are dBm.
 - Step increment is one major graticule division
- **DLE { OFF | ON | ? }**

- Enables or disables the display line
- {TS} {Command List} DONE
 - Allows you to determine when the spectrum analyzer has parsed a list of spectrum analyzer commands and has executed all commands prior to and including DONE. The DONE command returns a value of “1” when all commands in a command string or command list have been completed.
 - If a take sweep (TS) command precedes the command list, the TS command acts as a synchronizing function since the command list execution begins after the sweep time has been completed.
- E1
 - Positions the marker at the peak signal
 - Same as MKPK and MKPK H1 commands
- E2
 - Changes the center frequency of the display to the marker position
 - Same as MKCF command
- E3
 - Makes the center frequency step size as being the frequency difference between the delta marker and the active marker
 - Same as MKSS command
- E4
 - Moves the active marker to the RL
 - Same as MKRL command
- ERR { ? }
 - Returns an integer list of all error codes
- EX
 - Exchanges Trace A and Trace B, point by point.
 - Same as AXB and XCH TRA, TRB commands.
- FA {REAL {HZ | KZ | MZ |GZ} | UP | DN | OA | ?}
 - Specifies the start frequency value.
 - The start frequency is equal to the center frequency minus (the span divided by two) ($FA = CF - SP/2$). Changing the start frequency changes the center frequency and span.
- FB {REAL {HZ | KZ | MZ |GZ} | UP | DN | OA | ?}
 - Specifies the stop frequency value.
 - The stop frequency is equal to the center frequency plus the span divided by two ($FB = CF + SP/2$). Changing the stop frequency changes the center frequency and span.
- FOFFSET {REAL {HZ | KZ | MZ |GZ} | UP | DN | OA | ?}
 - REAL is any real or integer number. Default unit is Hz.
 - Specifies the frequency offset for all absolute frequency readouts such as center frequency.
 - The FOFFSET command selects a value that offsets the frequency scale for all absolute frequency readouts (for example, center frequency). Relative values such as span and marker delta are not offset.
 - When an offset is in effect, it is displayed beneath the bottom graticule line on the spectrum analyzer screen.
 - Execute “FOFFSET 0;” or “IP;” to turn off the offset.
 - Same as KSV command.
- FPKA
 - The FPKA command automatically adjusts the preselector frequency to yield the greatest signal level at the active marker. It returns the amplitude of the active marker.

- The FPKA command is only available when the analyzer's upper frequency limit is greater than 3 GHz. The command is not supported in analyzers with an upper frequency limit of 3 GHz or less, and will return an error message when used.
- FS
 - Sets the frequency span of the spectrum analyzer to full span. Resolution bandwidth, video bandwidth, and sweep time are all set to auto-coupled.
- GRAT {ON | OFF | 1 | 0 | ?}
 - Turns the graticule on or off
 - Same as KSm command
- I1
 - Sets the RF coupling to DC if your analyzer is capable of being switched. If your analyzer cannot be switched to DC coupling, the command will have no effect but an error message will not be generated.
 - For E4445A the DC coupled range is 3Hz to 13.2GHz, and the AC coupled range is 10MHz to 13.2GHz.
- I2
 - Sets the RF coupling to AC if your analyzer is capable of being switched. If your analyzer cannot be switched to AC coupling, the command will have no effect but an error message will not be generated.
 - For E4445A the DC coupled range is 3Hz to 13.2GHz, and the AC coupled range is 10MHz to 13.2GHz.
- ID { ? }
 - Returns the current remote language to the controller
 - **SA#1 is HP8566B**
- IP
 - Performs an instrument preset, setting the analyzer back to its factory settings.
 - Same as KST command
 - If the external amplifier gain has been set, executing an IP command will not reset this value. This is to protect the analyzer.
- KS {REAL {DM | MV | UV} | OA | ? }
 - Mixer Level
 - The KS, command specifies the maximum signal level that is applied to the input mixer for a signal that is equal to or below the reference level.
 - The effective mixer level is equal to the reference level minus the input attenuator setting. When KS, is activated, the effective mixer level can be set from -10 dBm to -70 dBm in 10 dB steps.
 - As the reference level is changed, the coupled input attenuator automatically changes to limit the maximum signal at the mixer input to your specified setting for signals less than or equal to the reference level.
 - Same as ML command
- KS= {REAL {HZ | HZ | MZ | GZ} | ?}
 - Specifies the resolution of the marker frequency counter.
 - The marker counter can be specified in time units when operating in the time domain.
 - Not supported in HP8566B remote language.
 - Same as MKFCR command
- KSA
 - Sets the amplitude readout (reference level, marker, display line and threshold) to dBm units.
 - Same as AUNITS DBM command
- KSa
 - The KSa command selects normal input detection. That is, it enables

- the 'rosenfell' detection algorithm that selectively chooses between positive and negative values.
 - Same as DET NRM command
- KSB
 - Sets the amplitude readout (reference level, marker, display line and threshold) to dBmV units.
 - Same as AUNITS DBMV command
- KSb
 - The KSb command enables positive peak input detection for displaying trace information. Trace elements are only updated when the detected signal level is greater than the previous signal level.
 - Same as DET POS command
- KSC
 - Sets the amplitude readout (reference level, marker, display line and threshold) to dBuV units.
 - Same as AUNITS DBUV command.
- KSc
 - Does a point-by-point addition of Trace A and Trace B, and sends the results to Trace A. Thus, if your input signal remains unchanged, KSc can restore the original trace after an AMB or a C2 command has been executed.
 - Same as APB command
- KSD
 - The KSD command sets the amplitude readout (reference level, marker, display line and threshold) to voltage units.
 - Same as AUNITS V command
- KSd
 - The KSd command selects negative-peak input detection for displaying trace information. Each trace element is updated with the minimum value detected during the sweep.
 - Same as DET NEG command
- KSE { CHAR } { REAL } { terminator }
 - The KSE command activates the title mode, writing a message to the top line of the display.
 - The characters that Option 266 will accept as a terminator include the 'at' sign (@), the Line Feed character (\n), and end of input. The Carriage Return (\r) character cannot be specified as a terminator, although it is accepted when Carriage Return marks the end of your input.
- KSe
 - The KSe command selects sample input detection for displaying trace information.
 - Same as DET SMP command.
- KSG { AVERAGE LENGTH | ON | OA | ? }
 - Enables video averaging. During video averaging, two traces are displayed simultaneously. Trace C shows the signal as seen at the input detector, while Trace A or Trace B show the same signal after averaging.
 - Before executing the KSG command, select Trace A or Trace B as the active trace (CLRW command) and blank the remaining trace.
 - Same as VAVG ON command
- KSG
 - Turns the analyzer's display Off.
- KSH
 - Turns off video averaging.

- Before executing the KSH command, select Trace A or Trace B as the active trace (CLRW command) and blank the remaining trace.
 - Same as VAVG OFF command.
- KSh
 - Turns the analyzer display on.
- KSi
 - Exchanges Trace B data with Trace C data.
 - Trace C cannot be an active trace.
 - Same as BXC and XCH TRB, TRC commands.
- KSj
 - Displays trace C
 - Same as VIEW TRC
- KSK
 - Moves the marker to the next signal peak of lower amplitude.
 - Similar to the MKPK NH command except it does not take into account either the marker peak excursion value or the threshold value (See MKPX and TH commands).
 - Not supported for HP8568B remote language.
- KSk
 - Blanks Trace C
 - Same as BLANK TRC command
- KSL
 - The KSL command disables the noise density function which displays the RMS noise density at the marker. KSL does not blank the marker.
 - Same as MKNOISE OFF command
- KS1
 - Transfers Trace B data to Trace C
 - Trace C cannot be an active trace
 - Same as the BTC command.
- KSM {NOTHING | OA | ?}
 - Displays the noise density at the marker. The noise density is normalized to a 1Hz bandwidth
 - Same as MKNOISE ON command
- KSm
 - Blanks the graticule of the analyzer display.
 - Same as GRAT OFF command.
- KSN
 - Moves the marker to the minimum value detected.
 - Same as MKMIN command.
 - Not supported when the remote language is HP8568B.
- KSn
 - Turns on the graticule on the analyzer display.
 - Same as GRAT ON command
- KSO
 - Marker Span
 - Operates only when the delta marker is On (see MKD or M3). When the delta marker is on an the KSO command is executed, the left marker specifies the start frequency and the right marker specifies the stop frequency.
 - If the delta marker is off, this command does nothing.
 - Same as MKSP command.
- KSo
 - Blanks the annotation on the analyzer display.
 - Same as ANNOT OFF command

- KSp
 - Activates the annotation on the analyzer display.
 - Same as the ANNOT ON command
- KST
 - Fast Preset
 - Performs and instrument preset, setting the analyzer back to factory defaults.
 - No fast preset on ESA and PSA series analyzers, so a IP is done.
- KSV {REAL {HZ | KZ | MZ | GZ}| OA | ?}
 - Allows you to specify a value that offsets the frequency scale for all absolute frequency readouts, for example, center frequency. Relative values, for example, span and delta marker, are not offset.
 - Same as FOFFSET command.
- KSx
 - External Trigger
 - Activates the normal external trigger mode. When the KSx command is executed, the RF input signal is only displayed when the external trigger level exceeds the trigger threshold level.
 - If an HP 8566B or an HP 8568B analyzer is in zero span and the sweep time is less than 20 msec, the display only gets refreshed when a fresh trace has been taken. This can cause the displayed trace to flicker. In Option 266, all traces are displayed continuously, so all traces are therefore free of flicker.
 - Same as TM EXT command.
- KSy
 - Activates the normal video trigger mode. When the KSy command is executed, the RF input signal is only displayed when the video trigger signal, which is internally triggered off the input signal, exceeds the trigger threshold level.
 - Same as TM VID and T4 commands.
- KSZ {REAL {DM | MV | UV} | OA | ? }
 - The KSZ command offsets all amplitude readouts on the display but without affecting the trace.
 - Once activated, the KSZ command displays the amplitude on the left side of the screen.
 - Entering KSZ 0 or presetting the spectrum analyzer eliminates an amplitude offset.
 - Same as the ROFFSET command
- L0
 - Disables the display line.
 - Same as the DLE OFF command
- LF
 - Performs a low frequency preset. That is, it selects a start frequency of 0 Hz and a stop frequency of 2.5 GHz, a reference level of 0 dBm, and sets all coupled functions automatic.
 - No supported for the HP8568 language.
- LG { INTEGER {DM} | UP | DN | OA | ? }

Specifies the amplitude (vertical graticule divisions) as logarithmic units, without changing the reference level.
- LN
 - Scales the amplitude (vertical graticule divisions) proportional to the input voltage, without changing the reference level. The bottom line of the graticule represents 0 volts.
- M1
 - Blanks any markers shown on the display
 - Same as MKOFF ALL command
- M2 {REAL {HZ | KZ | MZ | GZ} | UP | DN | OA | ? }

- Moves the active marker to the marker frequency. If the active marker has not been declared with MKACTION, a normal marker is turned on and this active marker is assumed to be 1. If the active marker type is not currently normal (for example, it is delta or peak), the M2 command will change it to a normal marker.
- Same as MKN command
- M3 {REAL {HZ | KZ | MZ |GZ } | UP | DN | ? }
 - Computes the frequency and amplitude difference between the active marker and the delta (or difference) marker.
 - If a delta marker is not displayed on the screen, the M3 command places one at the specified frequency or on the right hand edge of the display. If an active marker is not displayed on the screen, the M3 command places an active marker at the center of the screen.
 - The active marker is the number 1 marker unless otherwise specified by the MKACTION command.
 - If the M3 command is executed with the marker noise function active (MKNOISE ON or KSM), the marker amplitude displayed and returned by the MKA? command or the MA command is the difference between the noise densities at the reference marker and at the delta marker.
 - If the M3 command is executed before marker noise has been activated, the marker noise amplitude that is displayed on the screen is the difference between the carrier wave power and the noise density at the delta marker position.
 - However, the value returned by an MKA? command or by an MA command will always be the difference between the noise densities at the two markers. That is, the values returned by MKA? and MA do not always agree with those displayed on the screen. These returned values will only be correct as long as there has been no change in either the delta marker or the marker noise on the front panel.
 - The nominal ratio for PSA analyzers is 1.055 for all RBWs. Same as the MKD command
- MA
 - Returns the amplitude level of the active marker if the marker is on the screen. If both the active marker and the delta marker are displayed, the MA command returns the amplitude difference between the two markers.
 - The format of the returned data is determined by the TDF (Trace Data Format) command and, if TDF B (binary data format) has been selected, by the MDS command.
 - Same as the MKA command.
- MC0
 - Turns the marker frequency counter off
 - Same as MKFC OFF command
 - Not supported when the remote language is HP8566B.
- MC1
 - Turns the marker frequency counter on
 - Same as MKFC ON command.
 - Not supported when the remote language is HP8566B.
- MDS { NOTHING | B | W | ? }
 - Formats binary data in one of the two following formats
 - B - selects a data size of one 8-bit byte.
 - W - selects a data size of one word, with is two 9-bit bytes (Default Value)
- MEAN {TRA | TRB | TRC}
 - Returns the mean value of the specified trace in display units.
- MF
 - Marker Frequency Output

- Returns the frequency (or time) of the on-screen active marker. If both an active marker and the delta marker are on the screen, the frequency difference is returned.
- MINPOS { TRA | TRB | TRC }
 - Returns the X co-ordinate value that corresponds to the minimum amplitude of the specified trace.
- MKA { ? }
 - The MKA command returns the amplitude level of the active marker if the marker is on the screen. If both the active marker and the delta marker are displayed, the MKA command returns the amplitude difference between the two markers.
 - The format of the returned data is determined by the TDF (Trace Data Format) command and, if TDF B (binary data format) has been selected, by the MDS command.
 - Same as the MA command.
- MKACT { Marker Number | ? }
 - Marker Number - Integer 1 to 4
 - There can be four markers, but only one can be active at a time.
- MKCF
 - Marker to Center Frequency
 - Set the center frequency equal to the marker frequency and moves the marker to the center of the screen.
 - Same as the E2 command
- MKD { REAL { HZ | KZ | MZ | GZ } | UP | DN | OA | ? }
 - Step increment: by 1/10 of frequency span.
 - Computes the frequency and amplitude difference of the active marker and the delta marker. These values are displayed in the screen.
 - If a delta marker is not displayed on the screen, the MKD command places one at the specified frequency or on the right hand edge of the display. If an active marker is not displayed on the screen, the MKD command places an active marker at the center of the screen.
 - The active marker is the number 1 marker unless otherwise specified by the MKACT command.
 - If the MKD command is executed with the marker noise function active (MKNOISE ON or KSM), the marker amplitude displayed and returned by the MKA? command or the MA command is the difference between the noise densities at the reference marker and at the delta marker.
 - If the MKD command is executed before marker noise has been activated, the marker noise amplitude that is displayed on the screen is the difference between the carrier wave power and the noise density at the delta marker position.
 - However, the value returned by an MKA? command or by an MA command will always be the difference between the noise densities at the two markers. That is, the values returned by MKA? and MA do not always agree with those displayed on the screen. These returned values will only be correct as long as there has been no change in either the delta marker or the marker noise on the front panel.
 - The nominal ratio for PSA analyzers is 1.055 for all RBWs.
 - Same as the M3 command
- MKF { REAL { HZ | KZ | MZ | GZ } | UP | DN | ? }
 - Specifies the frequency value of the active marker.
 - The format of the returned data is determined by the TDF (Trace Data Format) command and, if TDF B (binary data format) has been selected, by the MDS command.
- MKFC { ON | OFF | 1 | 0 }
 - Turns on or off the marker frequency counter. The resolution of the frequency marker

- counter is determined by the MKFCR command.
 - Same as the MC0 and MC1 commands.
 - This command is not supported when the remote language is HP8566B.
- MKFCR { REAL { HZ | KZ | MZ | GZ } | UP | DN | ? }
 - The marker counter can be specified in time units when operating in the time domain.
 - Marker Counter Resolution
 - Sets the resolution of the marker frequency counter.
 - Same as the KS= command.
 - This command is not supported when the remote language is HP8566B
- MKMIN
 - Moves the active marker to the minimum value detected.
- MKN { REAL { HZ | KZ | MZ | GZ } | UP | DN | OA | ? }
 - Step increment by 1/10 of the frequency span.
 - Moves the active marker to the specified frequency. If the active marker has not been declared with MKA, a normal marker is turned on and this active marker is assumed to be 1. If the active marker type is not currently normal (for example, it is delta or peak), the MKN command will change it to a normal marker.
 - Same as the M2 command.
 - Is not supported when the remote language is HP8568B
- MKNOISE { ON | OFF | 1 | 0 | ? }
 - Displays the average RMS noise density at the marker.
 - Same as the KSM and KSL commands.
 - If an MKD command or an M3 command is executed with the marker noise function active, the marker amplitude displayed and returned by the MKA? command or the MA command is the difference between the noise densities at the reference marker and at the delta marker.
 - If an MKD command or an M3 command is executed before marker noise has been activated, the marker noise amplitude that is displayed on the screen is the difference between the carrier wave power and the noise density at the delta marker position.
 - However, the value returned by an MKA? command or by an MA command will always be the difference between the noise densities at the two markers. That is, the values returned by MKA? and MA do not always agree with those displayed on the screen. These returned values will only remain correct as long as there has been no change made to either the delta marker or the marker noise from the front panel.
 - The nominal ratio for PSA analyzers is 1.055 for all RBWs. MKOFF
- MKOFF { NOTHING | ALL }
 - Turns off either the active marker or all the markers.
 - If the ALL parameter is omitted, only the active marker is turned off.
- MKP { Integer | ? }
 - Sets the active marker to the specified X coordinate
- MKPK { HI | NH | NR | NL | NOTHING }
 - Used to place a marker on the highest signal peak detected, or to move a marker from one signal peak to another. The secondary keywords determine which signal peak the marker is moved to.
 - When executing the MKPK command, it is important to know whether you have an active marker on the screen. The result of issuing an MKPK command depends on whether a marker is already active or not.
 - MKPK: With no secondary keyword specified, the MKPK command moves the active marker to the highest signal peak. If no marker is active, a marker is activated at the highest signal peak. This is exactly the same as when the HI keyword is used.
 - MLPK HI: Moves the active marker to the highest signal peak. If no marker is

- active, a marker is activated at the highest signal peak. 'HI' equates to 'Highest (signal peak)'.
- MKPK NH: If there is an active marker on the screen, the NH keyword causes the marker to move down to the next highest signal peak. If there is no active marker, the command will be ignored. 'NH' equates to 'Next Highest (signal peak)'.
 - MKPK NR: If there is an active marker on the screen, the NR keyword causes the marker to move to the next signal peak of a higher frequency. If there is no active marker, the command will be ignored. 'NR' equates to 'Next Right (signal peak)'.
 - MKPK NL: If there is an active marker on the screen, the NL keyword causes the marker to move to the next signal peak of a lower frequency. If there is no active marker, the command will be ignored. 'NL' equates to 'Next Left (signal peak)'.
 - The MKPK command with parameters NH, NR and NL is ignored if there is no active marker.
 - MKPK (no secondary keyword) is the same as E1 command.
 - MKPK NH is similar to the KSK command except that KSK does not take into account either the marker peak excursion value or the threshold value. For more details on the marker peak excursion, see the MKPX command. For more information on the threshold, see the TH command.
 - MKPX { REAL | ? }
 - Preset State: 6 dB
 - Step increment: by 1dB.
 - Specifies the minimum signal excursion for the spectrum analyzer's internal peak identification routine.
 - The default value is 6 dB. In this case, any signal with an excursion of less than 6 dB on either side of the marker would not be identified. Thus, if an MKPK NH command were to be executed on such a signal, the analyzer would not place a marker on this signal peak.
 - MKREAD { FRQ | PER | SWT | IST | ? }
 - Selects the type of active trace information displayed by the spectrum analyzer marker readout.
 - FRQ - frequency
 - SWT - sweep time
 - IST - inverse sweep time (only available when using a delta marker in zero span)
 - PER - period
 - The results of the data depend on the MKREAD parameter and the frequency span, and whether the marker delta function is used.

	MKREAD Type	Non-Zero Span	Non-Zero Span Delta	Zero Span	Zero Span Delta
	FRQ	Reads frequency	Reads delta frequency	N/A	N/A
	SWT	Reads time since the start of sweep	Reads delta time between end points	Waveform measurements of detected modulation	Waveform measurements of detected modulation
○	IST	N/A	N/A	N/A	Computes frequency corresponding to delta of markers. Performs $1/(T_1 - T_2)$
	PER	Period of frequency	(Pulse measurement) delta time	N/A	N/A

- FFT is not available in the HP8566B/68B code compatibility system.
- MKRL
 - Moves the active marker to the reference level
 - Same as E4 command
- MKSP
 - Marker to Span
 - Operates only when the delta marker is On (see MKD or M3). When the delta marker is On and MKSP is executed, the delta marker and active marker determine the start and stop frequencies. The left marker specifies the start frequency, and the right marker specifies the stop frequency. If marker delta is Off, there is no operation.
 - If the active marker is not a delta marker, there is no change in its position.
 - Same as KSO command.
- MKSS
 - Marker to Step Size
 - Sets the center-frequency step-size equal to the marker frequency. If the analyzer is in the delta mode, the step size is set to the frequency difference between the active and the delta marker.
 - When the marker is a delta marker, this is the same as the E3 command.
- MKTRACE { TRA | TRB | TRC | ? }
 - Moves the active marker to the corresponding position in Trace 1, 2 or 3.
 - If the marker is moved to an inactive trace, the marker will move to the bottom of the screen on an ESA-E series analyzer, and to the top of the screen on a PSA analyzer.
- MKTRACK { ON | OFF | 1 | 0 | ? }
 - Moves the signal on which the active marker is located to the center of the spectrum analyzer display and keeps the signal peak at center screen.
 - To keep a drifting signal at center screen, place the active marker on the desired signal before turning on MKTRACK.
 - Same as MT0 and MT1 commands.
- ML { REAL { DB | DM | MV | UV | NOTHING } | UP | DN | OA | ? }
 - Mixer Level
 - Specifies the maximum signal level that is applied to the input mixer for a signal that is equal to or below the reference level. The effective mixer level is equal to the reference level minus the input attenuator setting.
 - If an external amplifier gain value is set, the mixer level is determined using the following equation:

Mixer Level = Ref. Level - Attenuation + Ext. Amplifier Gain

- The external amplifier gain is not preset by doing an IP command in case the analyzer is measuring a large signal. This is to protect the analyzer from damage from a large signal.
- Same as KS command.
- MT0
 - Disables the marker tracking mode
 - Same as MKTRACK OFF command.
- MT1
 - Moves the signal on which the active marker is located to the center of the spectrum analyzer display and keeps the signal peak at center screen.
 - To keep a drifting signal at center screen, place the active marker on the desired signal before issuing the MT1 command.
 - Same as the MKTRACK ON command.
- MXMH { TRA | TRB }
 - Maximum Hold
 - Updates each trace element with maximum level detected/
 - Same as A2 and B2 commands.
- O1
 - Format - Display Units
 - Transmits trace amplitude and position information as decimal values in display units.
- O2
 - Format - Two 8-bit bytes
 - Transmits trace amplitude and position information as two 8-bit binary numbers, or one instruction word.
- O3
 - Format - Real Amplitude Units
 - Transmits trace amplitude information only, in measurement units of Hz, dBm, dB, volts or seconds.
- O4
 - Format - One 8-bit Byte.
 - Transmits trace amplitude information only as a binary number.
- OT
 - Output Trace Annotations.
 - Sends 32 character-strings to the controller. Each character-string can be up to 64 characters long.
 - The 'dirty marker' status report returned in string 27 is only supported in PSA series analyzers.
- PEAKS { TRA | TRB | TRC }, { TRA | TRB | TRC }, { AMP | FREQ }
 - Three above groups are destination, source, and sorting method
 - Prerequisite commands: TS when using trace data
 - Sorts the signal peaks in the source trace by frequency or amplitude, and sends the results to destination trace.
- PKPOS { TRA | TRB | TRC }
 - Returns the X co-ordinate value of the maximum peak in the specified trace.
- PLOT {p1x}, {p1y}, {p2x}, {p2y}
 - Allows you transfer trace data, graticule and annotation information to a plotter.
 - The HP 8566B/HP 8568B transferred data directly to a plotter via the GPIB connection. The PLOT command now transfers data to a printer, and prints the entire screen. For instructions on connecting your analyzer to a printer, see the ESA-E and PSA User's Reference and Programming Guide.
 - Although the PLOT command will read in plotter dimension values, these will be

ignored.

- PP
 - Preselector Peak
 - Optimizes preselector tracking to peak the amplitude of a signal at the active marker. If a marker is not on the screen, PP places a marker at the highest signal level, and optimizes preselector tracking at that frequency.
 - This command is not supported when the remote language is HP8568B.
 - This command is only supported when the analyzer's maximum frequency limit is greater than 3 GHz. If the command is issued on an analyzer with a maximum frequency limit of 3 GHz or less, an error message will be generated stating that the command is not supported.
- PWRBW { TRA | TRB | TRC }, { number (0-100) }
 - Number is percent of total power
 - Returns the bandwidth of the specified percentage of the total power.
 - The Command first computes the total power of all the signal responses contained within the trace array. It then repeatedly eliminates the trace element from each end of the trace array until the combined power of the remaining trace elements represents the specified percentage of the total power. The result is the frequency span, or power bandwidth, of these remaining trace elements.
 - The resulting bandwidth is therefore centered on the display, and not on the trace's peak signal.
 - When this command is executed on an 8566, the trace stops. This is not the case when it is executed on either the ESA or PSA analyzers.
- R1
 - Illegal command SRQ
 - Deactivates all analyzer service requests (SRQs) except SRQ140, the illegal-command service request.
 - HP 8566B/68B Code Compatibility does not support the setting of bit 1 (units-key-pressed) of the status byte. Bit-1 of the status byte is always set to Off.
- R2
 - End of sweep SRQ
 - Activates the end of sweep and illegal-command service requests
 - HP 8566B/68B Code Compatibility does not support the setting of bit 1 (units-key-pressed) of the status byte. Bit-1 of the status byte is always set to Off.
- R3
 - Hardware Broken SRQ
 - Command activates the hardware-broken and illegal-command service requests.
 - HP 8566B/68B Code Compatibility does not support the setting of bit 1 (units-key-pressed) of the status byte. Bit-1 of the status byte is always set to Off.
- R4
 - Units-Key-Pressed SRQ
 - Activates the units-key-pressed and illegal command SRQs
 - ESA and PSA analyzers cannot replicate the units-key-pressed service request since no front panel interaction is supported.
 - HP 8566B/68B Code Compatibility does not support the setting of bit 1 (units-key-pressed) of the status byte. Bit-1 of the status byte is always set to Off.
- RB { REAL { HZ | KZ | MZ | GZ } | UP | DN | OA | ? }
 - Resolution Bandwidth
 - Preset State: 3MHz
 - Step increment: In 1, 3, 10 series
 - Specifies the resolution bandwidth. Available bandwidths are 10 Hz, 30 Hz, 300 Hz, 1 kHz, 3kHz, 30 kHz, 100 kHz, 300 kHz, 1 MHz, and 3 MHz. The resolution bandwidths, video bandwidths, and sweep time are normally coupled. Executing RB

- decouples them. Execute CR to reestablish coupling.
 - Default values on ESA and PSA analyzers may vary from the HP 8566B and the HP 8568B analyzers. Refer to the relevant ESA-E or PSA User Guide to find out any restrictions that may apply.
- RC {DIGIT}
 - Recall state
 - Recalls analyzer state data from the specified state register in the analyzer's memory.
 - Registers 1-6 are reserved for the user, and contain instrument states (such as front panel configuration) sorted with SAVES command or SV command.
 - Registers 7, 8 and 9 had specific uses in the HP8566B and HP 8568B analyzers. HP 8566B/68B Code Compatibility does not use these registers, so they are available for the your own use.
 - Same as the RCLS command
- RCLS {DIGIT}
 - Recall state
 - Recalls analyzer state data from the specified state register in the analyzer's memory.
 - Registers 1-6 are reserved for the user, and contain instrument states (such as front panel configuration) sorted with SAVES command or SV command.
 - Registers 7, 8 and 9 had specific uses in the HP8566B and HP 8568B analyzers. HP 8566B/68B Code Compatibility does not use these registers, so they are available for the your own use.
 - Same as the RC command
- REV
 - Returns the firmware revision number
 - In ESA and PSA analyzers, this command returns the build date of Option 266 that you have installed in your analyzer. The date is returned in YYWW format where YY is the number of years since 1950, and WW is the Work Week. As an example, if your Option 266 HP 8566B/68B Code Compatibility firmware was built on May 23 2002, the number 5221 would be returned. The year 2002 is 52 years after 1950, and May 23 is the 21st week of the year, hence 5221.
- RL { REAL { DB | DM | MV | UV | NOTHING } | UP | DN | OA | ? }
 - Specifies the amplitude level of the top graticule line on the display. This represents the reference level.
 - Signals above +30dB will damage the spectrum analyzer
 - The display line is decoupled from the reference level. That is, if the display line is ON, changing the reference level does not change the position of the display line, as would be the case when in SA mode. For example, changing your Reference Level from -10 dB to 0.0 dB would change the Display Line from, for instance, -50 dB to -40 dB.
- RMS {TRA | TRB | TRC}
 - Returns the room mean square value in display (measurement) units.
 - Prerequisite Commands: TS when using trace data
- ROFFSET { REAL { DB | DM | MV | UV | NOTHING } | OA | ? }
 - Offsets all amplitude readouts without affecting the trace.
 - Once activated, the ROFFSET command displays the amplitude offset on the left side of the screen.
 - Entering ROFFSET 0 or presetting the spectrum analyzer eliminates an amplitude offset.
 - Same as the KSZ command
- RQS {REAL | ? }
 - Sets a bit mask for service requests
 - Some differences may be noticed in the value returned by the RQS query when compared with the value set. This is because Option 266 on ESA and PSA analyzers

does not support the use of bit-1 of the status byte. Bit-1 of the status byte is always set to Off.

- S1
 - Sets the spectrum analyzer to continuous sweep mode. In the continuous sweep mode, the spectrum analyzer takes its next sweep as soon as possible after the current sweep (as long as the trigger conditions are met). A sweep may temporarily be interrupted by data entries made over the remote interface.
 - Same as the CONTS command
- S2
 - Sets the analyzer to single sweep mode. Each subsequent time that the command S2 is sent, one sweep is started if the trigger conditions are met.
 - Similar to the SNGLS command
- SAVES {DIGIT}
 - Saves the current state of the spectrum analyzer in any of the registers one through six.
 - Registers 7, 8 and 9 had specific uses in the HP8566B and HP 8568B analyzers. HP 8566B/68B Code Compatibility does not use these registers, so they are available for the your own use.
 - Same as the SV command
- SMOOTH {TRA | TRB | TRC }, {number of points}
 - Prerequisite commands: TS when using trace data
 - Smooths the trace according to the number of points specified for the running average.
 - Each point value is replaced with the average of the values (in measurement units) of the given number of points centered on it. Increasing the number of points increases smoothing at the cost of decreasing resolution. If the number of points is an even number, then the number of points is increased by one. If the number of points is larger than the size of SOURCE, then the size of SOURCE is used (unless size of SOURCE is even, in which case the size of SOURCE minus one is used). Smoothing decreases at the endpoints.
 - Some differences may be noticed between the smoothed trace in HP8566B/68B analyzers and the smoothed trace using the same signal in ESA-E and PSA analyzers.
- SNGLS
 - Sets the spectrum analyzer to single-sweep mode. Each time TS (take sweep) is sent, one sweep taken as long as the trigger conditions are met.
 - Similar to the S2 command.
- SP { REAL { HZ | KZ | MZ | GZ | NOTHING } | UP | DN | OA | ? }
 - Frequency Span
 - Step Increment: 1, 2, 5, 10 sequence (up to the stop frequency of the spectrum analyzer)
 - Changes the total displayed frequency range symmetrically about the center frequency.
 - If resolution and video bandwidths are coupled to the span width, the bandwidths change with the span width to provide a predetermined level of resolution and noise averaging. Likewise, the sweep time changes to maintain a calibrated display, if coupled. All of these functions are normally coupled, unless RB, VB, or ST have been executed.
 - HP 8566B/68B Code Compatibility does not mimic the exact coupling behavior of the HP8566B or HP8568B analyzers. Refer to your ESA - or PSA User's and Programmer's Reference Guide for the values used.
- SRQ {INTEGER}
 - Sends a service request to the controller when the SRQ operand fits the mask supplied with the RQS command.
 - HP 8566B/68B Code Compatibility does not support the setting of bit 1 (units-key-

pressed) of the status byte. Bit-1 of the status byte is always set to Off

- SS { REAL { HZ | KZ | MZ | GZ | NOTHING } | UP | DN | OA | ? }
 - Specifies the frequency step size
- ST { REAL { SC | MS | US | NOTHING } | UP | DN | OA | ? }
 - Specifies the time in which the analyzer sweeps the display frequency or time span.
- STDEV { TRA | TRB | TRC }
 - Prerequisite Commands: TS when using trace data
 - Returns the standard deviation of the trace amplitude in display units.
- SV { DIGIT }
 - Saves the current state of the spectrum analyzer in any of the registers one through six.
 - Registers 7, 8 and 9 had specific uses in the HP8566B and HP 8568B analyzers. HP 8566B/68B Code Compatibility does not use these registers, so they are available for the your own use.
 - Same as the SAVES command.
- T1
 - Sets the analyzer sweep to free run trigger
 - Same as the TM FREE command
- T2
 - Set the analyzer sweep to line trigger mode.
 - Same as the TM LINE command
- T3
 - Sets the analyzer sweep to external trigger mode.
 - Same as TM EXT command.
- T4
 - Sets the analyzer sweep to video trigger mode.
 - Same as the TM VID command
- TA
 - Returns trace A amplitude values from the analyzer to the controller.
 - The display unit values are transferred in sequential order (from left to right) as seen on the screen. Display unit values can be transferred to the controller in any one of the four output formats as determined by the O1, O2, O3 and O4 commands. The format of the returned data is also affected by the TDF (Trace Data Format) command and, if TDF B (binary data format) has been selected, by the MDS command
- TB
 - Returns trace B amplitude values from the analyzer to the controller.
 - The display unit values are transferred in sequential order (from left to right) as seen on the screen. Display unit values can be transferred to the controller in any one of the four output formats as determined by the O1, O2, O3 and O4 commands. The format of the returned data is also affected by the TDF (Trace Data Format) command and, if TDF B (binary data format) has been selected, by the MDS command
- TDF { P | A | I | B | M | ? }
 - Formats trace information for return to the controller.
 - M: enables the 01 format and returns in display unites 0 to 1001
 - P: enables the 03 format and returns absolute measurement values dBm or Hz
 - A: returns data a an A-block data field. The MDS command determines whether data comprises one or two 9-bit words.
 - I: returns data in an I-clock data field. The MDS command determines whether data comprises one or two 9-bit words.
 - B: enables the 02 or 04 format. The MDS command determines whether data comprises one or two 9-bit words.
- TH { REAL { DM | MV | UV | DB | NOTHING } | UP | DN | OA | ? }
 - Threshold

- Blanks signal responses below the threshold level, similar to a base line clipper. The threshold level is nine major divisions below the reference level, unless otherwise specified. The UP and DN commands move the threshold 10 dB.
- The HP 8566B and HP 8568B both blank the display of everything below the threshold level, but this is not the case with ESA and PSA analyzers. Using the PEAKS and MKPK commands causes any values below the threshold level to be disregarded, even though the full trace will still be displayed.
- TM {FREE | VID | LINE | EXT | ?}
 - Selects the trigger mode: free, line, video or external.
 - Same as T1, T2, T3 and T4 commands.
- TRA {?}
 - Transfers Trace A amplitude values from the analyzer to controller. The units are display units and the format depends on the trace data format selected.
- TRB {?}
 - Transfers Trace B amplitude values from the analyzer to controller. The units are display units and the format depends on the trace data format selected.
- TRDSP {TRA | TRB | TRC}, {ON | OFF | 1 | 0 | ?} or {{TRA | TRB | TRC} | {ON | OFF | 1 | 0 | ?}}
 - Turns the display of the specified trace on or off.
- TRSTAT {?}
 - Returns trace states to the controller.
 - Valid trace states are Clear-write, View and Blank.
- TS
 - Take sweep
 - Starts and completes one full sweep before the next command is executed.
 - Required for each sweep in the single-sweep model. TS prevents further input from the interface bus until sweep is completed to allow synchronization with other instruments.
- VAVG {Average Length | ON | OFF | ? }
 - Enables the video averaging function, which averages trace points to smooth the displayed trace. When queried, the VAVG command returns the average length.
 - Before executing the VAVG command, select Trace A or Trace B as the active trace (CLRW command) and blank the remaining trace.
 - Same as KSG and KSH commands.

Condition	Original HP 8566B and HP 8568B Spectrum Analyzers	HP 8566B/68B Code Compatibility Option
○ Change in center frequency or span	In single sweep mode, resets counter to zero and starts the averaging again	In single sweep mode, resets counter to zero and starts the averaging again

○	Change in resolution bandwidth, video bandwidth, sweep time, reference level or attenuation	In single sweep mode, resets counter to zero and starts the averaging again	Continues the measurement without resetting the counter.
	Change in average counter setting to a higher value	Continues counting from where the previous value left off	Resets the counter to zero and starts the measurement again
	Change in average counter setting to a lower value	Updates the screen annotation with the lower averaging value	Resets the counter to zero and starts the measurement again
	All conditions	Original trace is displayed in Trace C	Only displays the averaged trace. The averaged trace is displayed in Trace A
	Averaging turned on	Sweep time remains unchanged	Sweep time changes due to the selection of the sample detector

- VB { REAL { HZ | KZ | MZ | GZ | NOTHING } | UP | DN | OA | ? }
 - Specifies the video bandwidth, which is a post-detection, low-pass filter.
 - Default values on the ESA and PSA analyzers may differ from the HP 8566B and HP 8568B analyzers. Refer to the relevant ESA and PSA User's and Programmer's Reference Guides for more details on the restrictions on the video bandwidth range.
 - When auto coupled, the video bandwidth is calculated as Resolution Bandwidth x Video:Resolution Bandwidth Ratio
- VBO { 1 | -1 | 0 | ? }
 - Video Bandwidth Coupling Offset
 - Specifies the relationship between the video and resolution bandwidths which is maintained when these bandwidths are coupled. The bandwidths are usually coupled unless the RB command or VB command have been executed.
 - When 0 is selected, the ratio remains fixed at 1. That is, the resolution bandwidth and the video bandwidth are always equal
 - When 1 is selected, the video bandwidth is one step higher than the resolution bandwidth. That is, the video bandwidth:resolution bandwidth ratio is three.
 - When -1 is selected, the video bandwidth is one step lower than the resolution bandwidth. That is, the video bandwidth:resolution bandwidth ratio is 0.3.
- VIEW { TRA | TRB | TRC }
 - Displays trace A, trace B or trace C and stops taking new data into the viewed trace.
 - Same as A3 command
- XCH { TRA | TRB | TRC }, { TRA | TRB | TRC }
 - Exchanges the contents of the source and destination traces. The traces are analyzed and adjusted to fit the number of display points on the screen which is typically 1001 points.
 - XCH TRA, TRB is the same thing as the AXB and EX.
 - XCH TRB, TRC is the same thing as the BXC and KSi.

